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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,269	07/09/2003	James Minto	AES 03-001	4877

7590 12/27/2006
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EXAMINER

DANG, HUNG Q

ART UNIT	PAPER NUMBER
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2612

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/27/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/618,269

Applicant(s)

MINTO ET AL.

Examiner

Hung Q. Dang

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11, 13-18, 21-23, 25-27, 30-32, 34-35 is/are rejected.
- 7) ☒ Claim(s) 4, 12, 19, 20, 24, 28, 29 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) ✓
Paper No(s)/Mail Date 9/12/2003.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to because of the following informalities: the claimed "said pressure housing" does not have antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 5, 6, 9, 10, 13, 14, 17, 18, 21, 23, 25-27, 30, 32, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cecconi et al. U.S. Patent 6,614,718.

Regarding claim 1, Cecconi et al. teaches a shuttle for synchronizing a reference clock with downhole clock positioned within a borehole (column 8, lines 15-28), said shuttle comprising:

(a) a shuttle clock (column 8, lines 15-28; the stand-alone secondary casing spear is a shuttle clock); and

(b) a data port (unit 22) operationally connected to said shuttle clock; wherein

(c) said shuttle clock is synchronized with said reference clock via a first transmission link provided by said data port (column 8, lines 15-18);

(d) said shuttle is conveyed along said borehole to said downhole clock (column 8, lines 15-28); and

(e) said downhole clock is synchronized with said shuttle clock via a second transmission link provided by said data port thereby providing synchronization of said downhole clock with said reference clock (column 8, lines 15-28).

Even though, Cecconi et al. does not specifically indicate that said shuttle clock is conveyed along the borehole **by pumped drilling fluid**, however, Cecconi et al. mentions that the shuttle clock is conveyed down the borehole either by at the end of a slick-line metallic cable or **by free fall through the inside of the drill string** (column 4 lines 19-28 and column 8 lines 15-28). One skilled in the art would recognize that pumped drilling fluid has been conventionally used inside drilling string to convey drilling fluid to the downhole drilling bits; and the “free fall” of the shuttle clock disclosed by Cecconi et al. would logically involve the use of the drilling fluid to facilitate conveying said shuttle clock. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide the use of pumped drilling fluid to convey the shuttle clock disclosed by Cecconi et al., as explained above.

Regarding claims 2, 10, 21 and 30, examiner takes official notice that short range RF transmitter/receiver/antenna have been conventionally used in wireless borehole communication systems. Therefore, by conventionality, it would have been

obvious to one skilled in the art to provide RF transmitter/receiver/antenna to the data port of the shuttle clock disclosed by Cecconi et al. to wirelessly transmit/receive data.

Regarding claims 5, 13, 25 and 34, the stand-alone casing spear disclosed by Cecconi et al. is indeed a pressure housing in which said 'shuttle clock' and said data port are incorporated (the casing spear disclosed by Cecconi et al. is thermally insulated and therefore somewhat stabilize the pressure inside said spear); and since Cecconi et al. does not indicate that said housing is disposable, therefore, it is logically deduced that said housing is retained downhole after said downhole clock is synchronized with said shuttle clock thereby allowing said shuttle to be subsequently retrieved.

Claim 9 is rejected for the same reasons as the rejection of claim 1.

Claims 17 and 26 are rejected for the same reasons as the rejection of claim 1. Cecconi et al. also teaches the outputs from the reference clock and from the downhole clock and from at least one sensor are combined to determine geophysical parameter (column 4, lines 52-65; the synchronization of underground and above ground measurements are combined to determine geophysical parameter).

Regarding claims 18 and 27, the 'clock shuttle' disclosed by Cecconi et al. is indeed launched at time interval to maintain the reference clock and shuttle clock synchronization within a predetermined limit (column 8, lines 15-28; shows a time interval of 30 minutes, which is the time between the secondary casing spear is synchronized with the surface clock and the time the secondary casing spear is connected to the main casing spear)

Regarding claim 6, the downhole clock disclosed by Cecconi et al. is also incorporated within a seismic-while-drilling system (column 8, lines 10-14 suggests the disadvantage of having a complete stand-still of drilling operations so that unit 19 can be brought back to the surface; and column 8 lines 15-28 suggests the use of a stand-alone secondary 'shuttle clock' unit so that a seismic-while-drilling system can be achieved).

Claim 14 is rejected for the same reasons as the rejection of claim 6.

Regarding claims 23 and 32, Cecconi et al. also teaches a seismic sensor (column 3, lines 40-47).

Regarding claim 35, the predetermined limit of the synchronization disclosed by Cecconi et al. is "perfect synchronization", which is clearly less than millisecond.

4. Claims 3, 11, 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cecconi et al. U.S. Patent 6,614,718 in view of Cameron et al. U.S. Pub 2003/0211768.

Regarding claim 3, Cecconi et al. teaches the shuttle of claim 1, except wherein the data port comprises a **wet connector**.

Cameron et al. teaches a wet connector arrangement so that electrical connection for use in a downhole wet environment can be achieved (abstract).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a wet connector to the data port of the shuttle clock

disclosed by Cecconi et al., as evidenced by Cameron et al., so that electrical connection can be safely made in a wet downhole environment.

Claims 11, 22 and 31 are rejected for the same reasons as the rejection of claim 1.

5. Claims 7, 8, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cecconi et al. U.S. Patent 6,614,718 in view of Stoller et al. U.S. Pub 2002/0153481.

Regarding claims 7, 8, 15 and 16, as disclosed by Stoller et al., nuclear spectroscopy and pulsed neutron systems have been commonly used in downhole systems to obtain qualitative and quantitative information related to subsurface fluid movement (page 1, paragraph [0012]) and density/porosity of subsurface environment (page 1, paragraph [0011]).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the downhole clock disclosed by Cecconi et al. within a nuclear spectroscopy or a pulsed neutron logging-while-drilling system, as evidenced by Stoller et al., so that the downhole measured data can be correctly synchronized with a surface reference clock.

Allowable Subject Matter

6. Claims 4, 12, 19-20, 24, 28-29 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 4, 12, 24 and 33, the prior arts of record fail to teach or disclose a clock shuttle as claimed in claim 1, which further comprising a pressure housing in which said shuttle clock and said data port are incorporated, wherein said pressure housing is deformed thereby allowing disposal of said shuttle within said borehole after said downhole clock is synchronized with said shuttle clock via said second transmission link.

Regarding claims 19 and 28, the prior arts of record fail to teach or disclose the system of claims 17 and 26, respectively, which further comprises a plurality of said shuttles wherein each shuttle of said plurality of shuttles is launched sequentially at time intervals required to maintain said reference clock and shuttle clock synchronization within a predetermined limit.

Regarding claim 20, the prior arts of record fail to teach or disclose the system of claim 18, which further comprises a telemetry system linking the borehole assembly to the surface equipment, wherein durations of said time interval is determined using information telemetered from said borehole assembly to said surface equipment via said telemetry system.

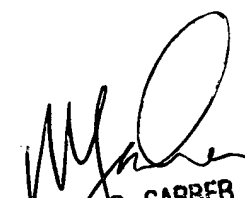
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Q. Dang whose telephone number is (571) 272-3069. The examiner can normally be reached on 9:30AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hung Q Dang
12/12/2006
H.D.



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